

## Melatonin may contribute to the seasonality of MS relapses

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Melatonin is a hormone produced in the body which is involved in setting our natural circadian rhythm (sleep-wake cycle). The amount of melatonin produced is dependent on seasonal variations in day length. In autumn and winter, when there are less hours of daylight more melatonin is produced. It has been observed that the number of MS relapses in autumn and winter months are generally lower than in spring and summer.

There has been a significant amount of research into the role that seasonal variations in the levels of vitamin D, the 'sunshine' vitamin, may play in risk of MS and seasonal variation in relapses, but researchers have also been investigating whether the seasonal variation in melatonin could play a part in this.

A group of researchers (Farez, Masanfroni et al.) have recently published a paper in the journal [Cell](#) that supports a role for melatonin in MS relapses.

They started by observing a group of 139 people with relapsing-remitting MS. Of this group they confirmed a 32% reduction in MS relapses in autumn and winter. They then focused on investigating the link between melatonin and the number of relapses by measuring levels of the Melatonin break-down product (6-SM) in their urine. They observed that the people with lower occurrences of relapses during this time had higher levels of 6-SM in their urine.

Using a mouse model of MS, they found that daily melatonin treatment significantly improved clinical symptoms of MS over a period of 20 days. They also observed a decrease in the number of inflammatory T cells (Th17) which are thought to contribute to MS pathogenesis.

The researchers then analysed the melatonin levels in the serum of 26 people with relapsing-remitting MS. Here they found that higher levels of melatonin correlate with decreased levels of a chemical (IL-17), which is responsible for increasing numbers of the inflammatory Th17 cells. Therefore melatonin appears to suppress this inflammatory response which has been linked to MS.

These findings provide insight into how higher levels of melatonin in winter months could have a link to the seasonal changes in relapse activity seen in people with MS. While this study suggests that there may be a link between melatonin and MS, further studies are needed to increase understanding of how it contributes to the progression and activity of the disease.

Melatonin supplements are often used to improve circadian sleep disorders, for example jet lag and sleep cycle reversal. It is thought that melatonin also has some anti-oxidant effects, however, to date there is no evidence as to whether melatonin supplementation has any benefits for MS and more research is required.